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came to issue it. It is an attempt to do away with a live teacher, and while for such a teacher it may have value as a book of reference, for children it cannot be called a satisfactory text-book. The first problem is $1 + 1$, the last is one in trade discount. It includes the necessary and the semi-obsolete tables of denominate numbers, all with equal prominence. Troy weight, which almost no one now uses, is made prominent, while the metric system, which over half the civilized world uses, is allowed a place in the appendix. The book places unconventional mathematical forms before children (in chains of operations, for example), although it is puritanically conventional as to the subject matter.

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Elements of Plant Anatomy. By EMILY L. GREGORY, Professor of Botany in Barnard College. Ginn and Company, Boston and London, 1895.

As the author states in the preface the "book contains the substance of the lectures given in the last half of the second year's course in Botany at Barnard College." It is intended to present in compact and convenient form the elementary principles of cellular structure and the structure of vegetative plant parts, or plant anatomy. The work is divided into two parts as follows:

Part I. "Anatomy of the Cell," to which are devoted three chapters; (1) on the "vegetable cell in general;" (2) on the "cell wall," which deals with the "finer and coarser structure of cell wall," the "chemical and physiological properties of wall," lignification, suberization, cutinization, and the formation of mucilage and gums; (3) the "cell contents," which includes a discussion of protoplasm, the cell nucleus and its division, together with the various organic and inorganic cell contents.

Part II. "Anatomy of the Tissues," to which are devoted four chapters; "tissue and tissue systems," "anatomy of the thallophytes," "anatomy of the cormophytes," and "secondary growth in thickness of stems and roots."

The author treats the subject largely from the developmental point of view, *i.e.*, tracing the origin or development of the various tissues in Part II., which is commendable, but if carried out logically would resolve this part of the subject into one of development and compara-

tive anatomy. This will strike some as being rather a large subject to be treated in a single elementary text book, which is destined to cover the entire range of plant groups and at the same time to deal with the finer histology, cell structure, and cell products, as is done in Part I. This is the more so since along the development and general comparative anatomy naturally goes the treatment of the development of the sexual organs, questions of comparative morphology, of homology, etc., of which the author does not treat in the present work. The elementary treatment of a subject with so wide a range is apt among other things to lead to vagueness and general indefiniteness in many statements. This is especially the case here in the treatment of the anatomy of the thallophytes where for example after speaking of the lowest fungi, the one celled forms which do not form tissue or at most only colonies of cells, there is described the formation of false tissue in the "next higher forms." The description probably refers to members of the group of Basidiomycetes, or possibly to the Ascomycetes, though neither of these groups is made up of the "next higher forms." Clearness would suggest that the name of the group in question be given. It also seems unfortunate that in comparative anatomy and morphology we should still discuss any plants as "cormophytes," for in treating of this one time group as distinguished from the thallophytes, when we trace the passage from the thallus to the stem and leaf (unless we limit the comparison to the Bryophyta) we are comparing organs which are not comparable from a developmental or morphological standpoint (*i. e.*, from the standpoint of homology), but only from a physiological standpoint, since the stem and leaf of the Bryophyta are only analogies (and poor ones at that) of the stem and leaf of the vascular cryptogams and phanerogams. It is unfortunate from a morphological standpoint that these organs of the Bryophyta should be called stems and leaves, but this is no fault of the present author, the terminology being handed down from a time when the true homologies of the sporophyte and gametophyte parts were not well known.

However, the chapter on the tissues and systems, the treatment of the tissues of the phanerogams, and secondary growth in thickness of stems and roots, make a welcome presentation in concise form of the fundamental principles and important facts of plant histology for the beginner, or for those who have not the time to devote to a more thorough consideration of the subject.

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